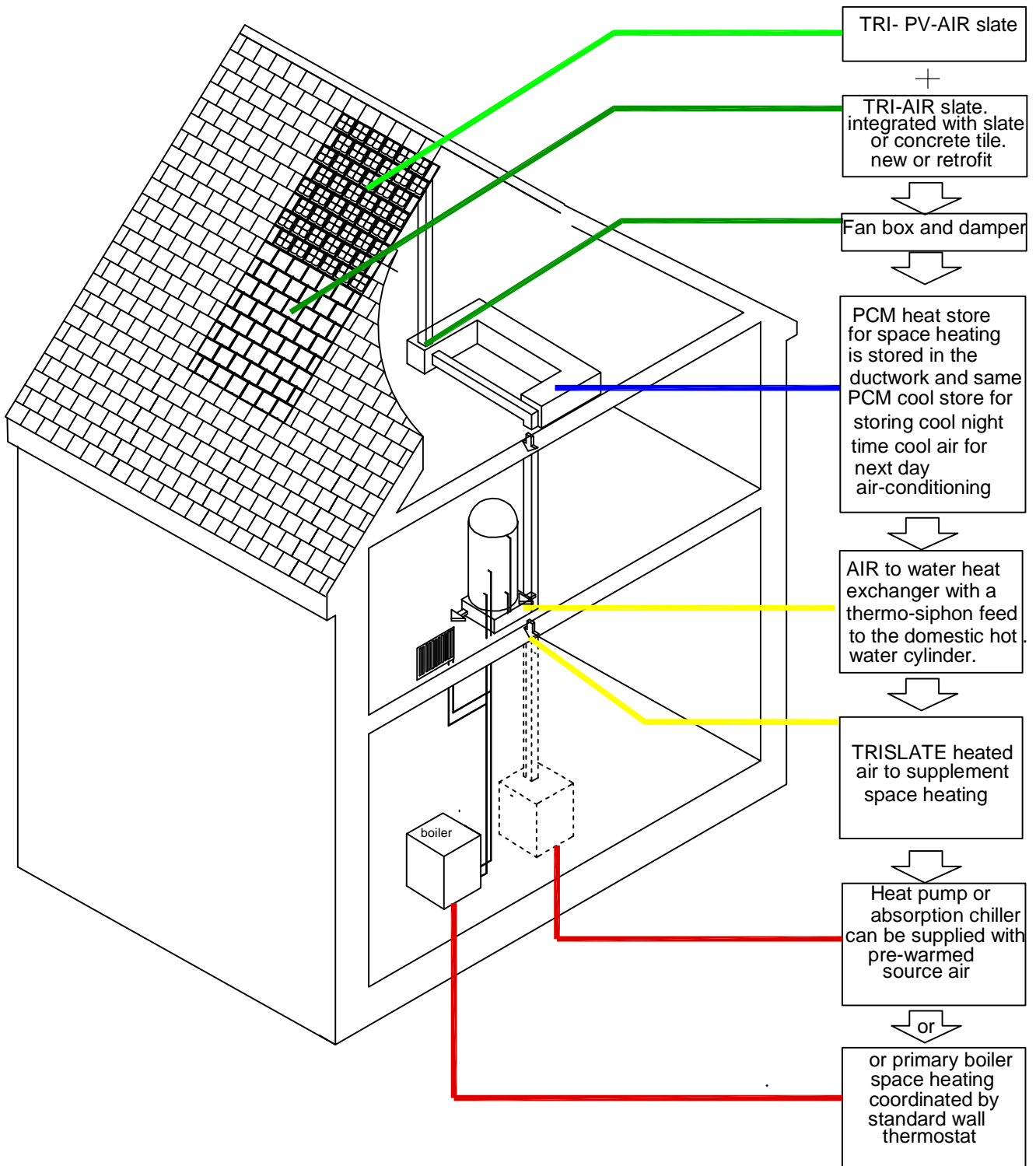


# TRISLATE SYSTEM



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# **TRISLATE is a prototype for the next generation of solar collector. It provides heating, cooling and electricity in a coherent building fabric. The thermal function is up to 3 times cheaper than the installed solar water panels per kW/ therm.**

## **Existing Solar products.**

Solar products face three challenges, coherence, cost and credibility. The first generation of thermal and photovoltaic products had to establish credibility first, through standards, in order to attain Government grants and feed-in tariffs. This priority however has led to and low coherence and high costs. For example it is very difficult to source supplies of solar thermal and photovoltaic panels that match in size, colour and weathering.

## **The EU Market potential.**

The EU has issued a directive that new buildings should be able to provide all their own energy by on-site solar and other renewable energy means, by 2019.

The European Solar Thermal Technical Platform (ESTTP) is an industrial and research advisory group to the EU commission. It believes that it will take **10 years** to research and bring to market appropriate building fabrics for this purpose. This building fabric would coordinate solar thermal, solar cooling, solar photovoltaic and thermal storage, while being “un-visible”. This is called the HUB concept. The ESTTP propose that through the HUB concept, solar energy can provide 50% of EU heating and cooling requirements by 2050.



## **The next generation:**

The TRISLATE concept has been proved through technical trials in the Dublin Institute of Technology. There are two products in the range, the TRI-AIR slate which is a metal slate which collects hot air by fan during the day and cool air at night. The second product is the TRI-PV-AIR slate which collects Photovoltaic electrical energy, plus heat, plus cool energy at night. This triple function gives rise to the name TRISLATE. **Instead of a ten year research period, it is planned to bring this patent pending product to market in under 2 years.**

## **High efficiencies: 68% peak.**

The thermal efficiency reached a maximum of 68% on one day in June in Dublin, and the average efficiency for May and June was 48%. These efficiencies should increase in climates of low wind speed and high solar radiation. The technology is based on an unglazed transpired system which has only been used to

date commercially, in industrial cladding materials.

## **Photovoltaic – thermal hybrid. (PVT technology)**

The collection of heat from a PV panel solves two problems at the same time. It reduces the temperature of the PV panel, therefore increasing the efficiency of the PV, while collecting the useful solar thermal energy. Thermal efficiencies of 25% in addition to the PV output have been recorded. Improvements on this efficiency are planned for 2010.

The current PV technology used is crystalline silicone, however the thin film technologies are being investigated.



## **Cooling.**

There are two methods of cooling by using the TRISLATE. The first is the collection of night time air. The slates radiate heat to the night time sky and the air is drawn in a few degrees below ambient air temperature. The cool energy is then stored in a phase change material for use as air-conditioning the next day. The second cooling method is by using the heat

generated by the TRISLATE to power absorption chillers or heat pumps.

### **The cost.**

The cost exercises have been carried out for the thermal function at this stage. The installed cost is estimated to be up to **3 times cheaper** than solar thermal water heaters, per kW therm.

The cost exercises for night time cooling and PV have yet to be completed. The coherence between the functions ensures that costs are shared and therefore reduced for a competitive price curve in the present and future markets.

### **Payback in Ireland: 6 to 8 yr**

The calculation of the payback period for the solar thermal function of the TRI-AIR slate in Ireland is calculated as between 6 and 8 years.

### **Payback in France : 3.5 to 6**

In the south of France the payback period is calculated as between 3.5 to 6 years.

The assumptions made in the payback calculations are, an average of 10% increase in oil prices over 10 years while allowing for security of supply of oil and gas. It also assumes that the thermal efficiency in the south of France will be the same as Ireland. Tests should prove an increase in efficiency.

### **Credibility**

The system has been tested by the Dublin Institute of Technology in order to prove the concept.

The validation of this system will be addressed through the European Technical Approval (ETA) system for innovative building products. This will take approximately 18 months. There are two countries being considered for the location of the tests and the ETA certification, and these are Germany and France.

### **The advantage of air.**



The TRISLATE can raise air temperatures 30 degrees above ambient temperature, on an intermittent sunny day. This air can be used for direct space heating, preheating of hot water through a heat exchanger or cooling of absorption chillers.

Air is also the ideal medium for capturing the heat element in photovoltaic-thermal hybrid (PVT) products. Air is probably the only heat medium that can satisfy all of the criteria of the HUB concept.

### **Coherence.**

Coherence is a matter of making sustainability more manageable. It is mainly an architectural challenge however there is a significant gap between the concept and coherent practical products, which deliver the range of functions required by an architect. In practical terms the solar fabric needs to be unglazed so that it can be worked by craftsmen on site, especially for the retrofit market. It needs to be variable in colour to blend with the roofing and cladding materials.

The TRISLATE system offers coherence at low cost with the simplicity of two products. It links thermal and PV; size and colour, roofing and cladding; cool storage and heat storage; retrofit and new construction; residential and commercial.

### **Barriers to entry**

The barriers to entry to the competition consist of patent applications in the EU and Canada. Design patent applications due to be lodged in the EU and the USA. The European Technical Approval process and expansion of production through licensing structures will help maintain a first mover status.

### **The route to market**

The route to market will be through a system of licensing to manufacturers. The potential customers will include companies in the area of roofing materials, cladding materials, solar thermal, crystalline solar PV, thin film PV, heating and ventilation equipment. The strategy is to ensure the maximum production of the products to keep pace with the projected demand in EU and for the export markets.

### **Investors**

The company is currently raising up to €1 million in capital for the validation process through the European Technical Approval system. Contact : Matt Barnes 0035314933244 or [info@trislate.com](mailto:info@trislate.com).

